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EXAMINER	
SHAH, MANISH S	

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 05/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/661,969	NITO ET AL.	
	Examiner	Art Unit	
	Manish S. Shah	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-24 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-24 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 11/24,02/20,03/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyano et al. (# JP 2002-079739) in view of Davis et al. (# US 5695820).

Koyano et al. discloses a set of an ink and reaction solution (pretreatment liquid) (see Abstract) for use in image recording in conjunction with ink containing a coloring material in a dissolve or dispersed state ([0126]-[0136]), the reaction solution destabilizing the dissolved or dispersed state of the coloring material in the ink contact with the ink. They also disclose that the reaction solution including polyvalent metal ion (salt) ([0098]-[0099]) and organic solvent ([0104]-[0106]) and have a pH of 2 or higher ([0124]). They also disclose that the reaction solution further contains a strong acid ion ([0125]-[0126]) and a buffer ([0100]-[0102]). They also disclose that the pH of the reaction solution is 7 or lower ([0124]; see Examples). They also disclose that the pH of the reaction solution is controlled by the controlling agent, wherein the controlling agent is selected from lithium hydroxide, sodium hydroxide, potassium hydroxide ([0124]).

Koyano et al. differs from the claim of the present invention in that (1) the pH variation within the range of 0.5 before and after the addition of 1.0 ml of a 0.1 N

aqueous solution of lithium hydroxide solution to 50 ml of the reaction solution. (2) The amount of the polyvalent metal ion is from 0.01 to 10% by weight.

However, Koyano et al. teaches that the pH can be control by the controlling agent, wherein controlling agent is 10% of aqueous solution of lithium hydroxide (see Examples: 2, 13). Because of the same pH controlling solution, it will give the same kind of results as applicant claimed.

It would have been obvious to one having ordinary skill in the art at the time of invention was made to incorporate the pH controlling agent of Koyano et al. to control the pH variation of 0.5, since it has been held that it is not inventive to discovering and optimum value or workable ranges by routine experimentation. *In re Aller*, 105 USPQ 233 (CCPA1955).

Davis et al. teaches that to get the uniform distribution of the reaction solution and ink composition, the reaction solution (treatment solution) (column: 3, line: 5-10) for use in image recording in conjunction with ink containing a coloring material in a dissolve or dispersed state (column: 3, line: 1-5; column: 6, line: 58-67), wherein the reaction solution including polyvalent metal ion (salt) (column: 4, line: 1-33) and organic solvent (column: 7, line: 5-40) and the amount of polyvalent metal salt is from 1 to 11% by weight more preferably 3 to 6 % by weight (column: 4, line: 39-42). They also disclose that the reaction solution further contains a strong acid ion (column: 6, line: 19-45) and a buffer (column: 7, line: 20-25).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the amount of the polyvalent metal salt in reaction solution of

Koyano et al. by the aforementioned teaching of Davis et al. in order to have uniform distribution of the reaction solution and it gives the high quality printed image.

2. Claims 7-12 &14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyano et al. (# JP 2002-079739) in view of Davis et al. (# US 5695820).

Koyano et al. discloses an ink jet recording apparatus (figure: 1,2) including a recording head (element: 20, figure: 1, 2) for discharging an ink containing a coloring material in dissolved or dispersed state, ink cartridge having an ink storage unit containing the ink (element: 21, figure: 1, 2), ink supply means for supplying the ink from the ink cartridge to the recording head (figure: 1, 2), and means for supplying the reaction solution capable of destabilizing the dissolved or dispersed state of the coloring material in the ink in contact with the ink (element: 42, figure: 1, 2). They also disclose that the reaction solution including polyvalent metal ion (salt) ([0098]-[0099]) and organic solvent ([0104]-[0106]) and have a pH of 2 or higher ([0124]). They also disclose that the reaction solution further contains a strong acid ion ([0125]-[0126]) and a buffer ([0100]-[0102]). They also disclose that the pH of the reaction solution is 7 or lower ([0124]; see Examples). They also disclose that the pH of the reaction solution is controlled by the controlling agent, wherein the controlling agent is selected from lithium hydroxide, sodium hydroxide, potassium hydroxide ([0124]). They also disclose that the pH of the reaction solution is lower than the pH of the ink and viscosity of the reaction solution is greater than the viscosity of the ink (see Examples). They also disclose that the ink jet recording apparatus including a coating roller for coating the reaction solution

on a recording medium (element: 42, figure: 1,2), and an amount of the reaction solution applied on the recording medium is from 0.5 g/m^2 to 10 g/m^2 ([0103]).

Koyano et al. differs from the claim of the present invention in that (1) the pH variation within the range of 0.5 before and after the addition of 1.0 ml of a 0.1 N aqueous solution of lithium hydroxide solution to 50 ml of the reaction solution. (2) The amount of the polyvalent metal ion is from 0.01 to 10% by weight.

However, Koyano et al. teaches that the pH can be control by the controlling agent, wherein controlling agent is 10% of aqueous solution of lithium hydroxide (see Examples: 2, 13). Because of the same pH controlling solution, it will give the same kind of results as applicant claimed.

It would have been obvious to one having ordinary skill in the art at the time of invention was made to incorporate the pH controlling agent of Koyano et al. to control the pH variation of 0.5, since it has been held that it is not inventive to discovering and optimum value or workable ranges by routine experimentation. *In re Aller*, 105 USPQ 233 (CCPA1955).

Davis et al. teaches that to get the uniform distribution of the reaction solution and ink composition, the reaction solution (treatment solution) (column: 3, line: 5-10) for use in image recording in conjunction with ink containing a coloring material in a dissolve or dispersed state (column: 3, line: 1-5; column: 6, line: 58-67), the reaction solution including polyvalent metal ion (salt) (column: 4, line: 1-33) and organic solvent (column: 7, line: 5-40) and wherein the amount of polyvalent metal salt is from 1 to 11% by weight more preferably 3 to 6 % by weight (column: 4, line: 39-42). They also

disclose that the reaction solution further contains a strong acid ion (column: 6, line: 19-45) and a buffer (column: 7, line: 20-25).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the amount of the polyvalent metal salt in reaction solution of Koyano et al. by the aforementioned teaching of Davis et al. in order to have uniform distribution of the reaction solution and it gives the high quality printed image.

3. Claims 16-21 & 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyano et al. (# JP 2002-079739) in view of Davis et al. (# US 5695820).

Koyano et al. discloses an image recording method including a steps of coating a recording medium with reaction solution capable of destabilizing the dissolved or dispersed state of a coloring material in an ink in contact with the ink containing the coloring material in a dissolved or dispersed state, and a step of coating the ink on the recording medium by the inkjet method ([0164]-[0168]). They also disclose that the reaction solution including polyvalent metal ion (salt) ([0098]-[0099]) and organic solvent ([0104]-[0106]) and have a pH of 2 or higher ([0124]). They also disclose that the reaction solution further contains a strong acid ion ([0125]-[0126]) and a buffer ([0100]-[0102]). They also disclose that the pH of the reaction solution is 7 or lower ([0124]; see Examples). They also disclose that the pH of the reaction solution is controlled by the controlling agent, wherein the controlling agent is selected from lithium hydroxide, sodium hydroxide, potassium hydroxide ([0124]). They also disclose that the pH of the reaction solution is lower than the pH of the ink and viscosity of the reaction solution is

greater than the viscosity of the ink (see Examples). They also disclose that the ink jet recording apparatus including a coating roller for coating the reaction solution on a recording medium (element: 42, figure: 1,2), and an amount of the reaction solution applied on the recording medium is from 0.5 g/m^2 to 10 g/m^2 ([0103]).

Koyano et al. differs from the claim of the present invention in that (1) the pH variation within the range of 0.5 before and after the addition of 1.0 ml of a 0.1 N aqueous solution of lithium hydroxide solution to 50 ml of the reaction solution. (2) The amount of the polyvalent metal ion is from 0.01 to 10% by weight.

However, Koyano et al. teaches that the pH can be control by the controlling agent, wherein controlling agent is 10% of aqueous solution of lithium hydroxide (see Examples: 2, 13). Because of the same pH controlling solution, it will give the same kind of results as applicant claimed.

It would have been obvious to one having ordinary skill in the art at the time of invention was made to incorporate the pH controlling agent of Koyano et al. to control the pH variation of 0.5, since it has been held that it is not inventive to discovering and optimum value or workable ranges by routine experimentation. *In re Aller*, 105 USPQ 233 (CCPA1955).

Davis et al. teaches that to get the uniform distribution of the reaction solution and ink composition, the reaction solution (treatment solution) (column: 3, line: 5-10) for use in image recording in conjunction with ink containing a coloring material in a dissolve or dispersed state (column: 3, line: 1-5; column: 6, line: 58-67), the reaction solution including polyvalent metal ion (salt) (column: 4, line: 1-33) and organic solvent

(column: 7, line: 5-40) and wherein the amount of polyvalent metal salt is from 1 to 11% by weight more preferably 3 to 6 % by weight (column: 4, line: 39-42). They also disclose that the reaction solution further contains a strong acid ion (column: 6, line: 19-45) and a buffer (column: 7, line: 20-25).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the amount of the polyvalent metal salt in reaction solution of Koyano et al. by the aforementioned teaching of Davis et al. in order to have uniform distribution of the reaction solution and it gives the high quality printed image.

4. Claims 13 & 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyano et al. (# JP 2002-079739) in view of Davis et al. (# US 5695820) as applied to claims 7-12, 14-21 & 23-24 above, and further in view of Matzinger (# US 6020397).

Koyano et al. and Davis et al. teaches all the limitation of the claimed invention except that the viscosity of the reaction solution is greater than the viscosity of ink.

Matzinger teaches that to get the wet-rub resistance and accent marker resistance printed image, inkjet printing method and apparatus including the ink composition and reaction solution, wherein viscosity of the reaction solution is greater than the viscosity of ink (see Example: 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink and reaction composition in the inkjet printing method and apparatus of Koyano et al. as modified by the aforementioned teaching of Matzinger in order to have wet-rub resistance and accent marker resistance printed image.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(1) Koyano et al. (# US 2003/0064206 A1) discloses a set of an ink and reaction solution (pretreatment liquid) (see Abstract) for use in image recording in conjunction with ink containing a coloring material in a dissolve or dispersed state ([0161]-[0174]), the reaction solution destabilizing the dissolved or dispersed state of the coloring material in the ink contact with the ink. They also disclose that the reaction solution including polyvalent metal ion (salt) ([0116]) and organic solvent ([0131]-[0136]) and have a pH of 2 or higher ([0156]). They also disclose that the amount of polyvalent metal salt is from 0.01 to 10% by weight (see Examples). They also disclose that the reaction solution further contains a strong acid ion ([0158]-[0159]) and a buffer ([0118]-[0122]). They also disclose that the pH of the reaction solution is 7 or lower ([0156]). They also disclose that the pH of the reaction solution is controlled by the controlling agent, wherein the controlling agent is selected from lithium hydroxide, sodium hydroxide, potassium hydroxide ([0157]). They also disclose that the ink jet recording apparatus including a coating roller for coating the reaction solution on a recording medium (element: 42, figure: 1,2), and an amount of the reaction solution applied on the recording medium is from 0.5 g/m^2 to 10 g/m^2 ([0124]).

(2) Takemoto (# US 6341854) discloses the ink jet recording method using two liquid, wherein reaction solution composition including polyvalent metal salt in an

amount of 0.1 to 40% by weight (column: 5, line: 10-35). They also discloses that the ink composition including pigment or dye as a colorant (column: 7, line: 10-40).

(3) Takemoto et al. (# EP 0739743 A1) discloses the ink jet recording method using two liquid, wherein reaction solution composition including polyvalent metal salt in an amount of 0.1 to 40% by weight (page: 4, line: 45-60). They also discloses that the ink composition including pigment or dye as a colorant (page: 7, line: 1-40).

(4) Miyabayashi (# US 6538047) discloses the ink jet recording method using two liquid, wherein reaction solution composition including polyvalent metal salt (column: 18, line: 55-67) in an amount of 0.1 to 40% by weight (column: 19, line: 5-10); polyol, acid, buffer (column: 19, line: 30-55) and organic solvent (column: 20, line: 1-20). They also discloses that the ink composition including pigment or dye as a colorant (column: 9, line: 1-60).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manish S. Shah whose telephone number is (571) 272-2152. The examiner can normally be reached on 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Manish S. Shah
Examiner
Art Unit 2853

MSS
5/8/04